

What is claimed is:

1. An image decoding apparatus provided with a decoding device which decodes the input coded data of an image for generating an image data, comprising:

first to N-th (N is an integer more than 2) image format conversion devices for generating and outputting first to N-th images after converting said image data into

5 predetermined image formats.

2. An image decoding apparatus comprising:

first to N-th decoding devices which convert input first to N-th image coded data for generating and outputting first to N-th image data by decoding said first to N-th image coded data; and

5 first to N-th image format conversion devices for generating and outputting first to N-th image data by converting any of said image data from among said first to N-th image data into respective predetermined image formats.

3. An image decoding apparatus according to claim 2, wherein the image decoding apparatus comprises a distribution control apparatus for distributing any of the image data among first to N-th image data respectively to first to N-th image format conversion devices, in response to a request of said first to N-th image format conversion device.

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4. An image decoding apparatus according to claim 2, wherein at least one of said first to N-th image coded data is input through a PCI (Peripheral Component Interconnect) bus.

5. An image decoding apparatus according to claim 1, wherein the image decoding apparatus comprises:

an image synchronizing signal generation device for generating and outputting a first vertical image synchronizing signal used for outputting said image by any one of the image format conversion devices among said first to N-th image format conversion devices; and

first to M-th (M: an integer equal to N-1) image synchronizing signal generating and synchronization adjusting devices for generating and outputting the second to the N-th vertical image synchronizing signals respectively in synchronization with said first vertical image synchronizing signal by said image format conversion devices other than said one of the image format conversion device.

6. An image decoding apparatus according to claim 5, wherein said first to M-th image synchronizing signal generating and synchronization adjusting devices comprise:

a counter for generating any one of said second to N-th vertical image synchronizing signals generated and output respectively by said first to M-th image synchronizing signal generating and synchronization adjusting devices; and

a counter control device for controlling the operation of said counter based on said first vertical image synchronizing signal.

7. An image decoding device according to claim 1, wherein at least one of said image format conversion devices among said first to N-th image format conversion devices generates an image converted into a format composed of 1920 pixels in the horizontal direction and 1080 lines in the vertical direction, and at least one of said image format conversion devices generates an image converted into a format composed of 720 pixels

in the horizontal direction and 480 lines in the vertical direction.

8. An image decoding apparatus according to claim 2, wherein at least one of said decoding device and said first to N-th image format conversion devices are formed on the same semiconductor integrated circuit substrate.

9. A semiconductor device comprising:

a decoding device for generating an image data by decoding input image coded data, and for storing the thus generated image data in an externally installed memory device;

5 a decoded data reading device for reading said image data stored in said memory device in response to an inputting decoded data request signal and for outputting as the decoded data;

an image synchronizing signal generation device for generating and outputting a first horizontal image synchronizing signal and a first vertical image synchronizing  
10 signal;

an image synchronizing signal generating and synchronization adjusting device for generating and outputting a second horizontal image synchronizing signal and a second vertical image synchronizing signal, which is synchronized with said first vertical image synchronizing signal;

15 a first image format conversion device for generating a first image by converting said input decoded data signal into a predetermined image format, and for outputting said first image after synchronizing with said first horizontal image synchronizing signal and said first vertical image synchronizing signal; and

a second image format conversion device for generating a second image by

- 20 converting said inputting decoded data signal into a predetermined image format, and for outputting said second image after synchronizing with said second horizontal image synchronizing signal and said second vertical image synchronizing signal.

10. A semiconductor device comprising:

a first decoding device for generating a first image data by decoding input first image coded data and for storing the generated first image data in an externally installed memory device;

- 5 a second decoding device for generating a second image data by decoding an input second image coded data, and for storing the generated second image data in an externally-installed memory device;

- a decoded data reading device for reading said first or second image data stored in said memory device in response to an inputting first decoded data request signal and  
10 for reading said first or second image data stored in said memory device in response to an inputting second decoded data request signal and for outputting multiplexed decoded data prepared by multiplexing said first or second image data;

- a distribution control device for distributing said multiplexed decoded signal to a first decoded data signal corresponding to said first decoded data request signal and a  
15 second decoded data signal corresponding to said second decoded data request signal;

an image synchronizing signal generation device for generating a first horizontal image synchronizing signal and a first vertical image synchronizing signal;

- an image synchronizing signal generating and synchronization adjusting device for generating and outputting a second horizontal image synchronizing signal and a  
20 second vertical image synchronizing signal;

a first image format conversion device, which outputs a first decoded data request

signal for generating a first image by converting said input decoded data signal into a predetermined image format and for outputting said first image after synchronizing with said first horizontal image synchronizing signal and said first vertical image

25 synchronizing signal; and

a second image format conversion device which outputs a second decoded data signal for generating a second image by converting said inputting decoded data signal into a predetermined image format, and for outputting said second image after synchronizing with said second horizontal image synchronizing signal and said second

30 vertical image synchronizing signal.

11. A semiconductor device according to claim 10, wherein at least said decoding device, said image synchronizing signal generating device, said image synchronizing signal generating and synchronization adjusting device, said image format conversion device, and said second image format conversion device are formed on a semiconductor  
5 integrated circuit substrate.

12. An image decoding method for decoding an inputting image coded data and for generating an image data comprising the steps of:

generating a first horizontal image synchronizing signal and a first vertical image synchronizing signal;

5 generating a second horizontal image synchronizing signal and a second vertical image synchronizing signal which is synchronized with said first vertical image synchronizing signal;

generating a first image by converting said image data into a predetermined image format and outputting the generated first image after synchronizing said first image with

- 10 said first horizontal image synchronizing signal and with said first vertical image  
synchronizing signal; and
- generating a second image by converting said image data into a predetermined  
image format and outputting the generated second image after synchronizing said second  
image with said second horizontal image synchronizing signal and with said second  
15 vertical image synchronizing signal.

13. An image decoding method comprising:

- generating a first image data by decoding an inputting first image coded data;  
generating a second image data by decoding an inputting second image coded  
data;
- 5 controlling the distribution of said first and second image data to their request  
sources;
- generating a first horizontal image synchronizing signal and a first vertical image  
synchronizing signal;
- generating a second horizontal image synchronizing signal and a second vertical  
10 image synchronizing signal synchronized with said first vertical image synchronizing  
signal;
- generating a first image from said requested first image data by converting into a  
predetermined image format and outputting said first image after synchronizing said first  
image with said first horizontal image synchronizing signal and said first vertical image  
15 synchronizing signal; and
- generating a second image from said requested second image data by converting  
into a predetermined image format and outputting said second image after synchronizing  
said second image with said second horizontal image synchronizing signal and said

second vertical image synchronizing signal.

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